Air Quality Permitting
Technical Memorandum

December 2, 2002

Tier II Operating Permit and Permit to Construct No. 047-00013

Holcim (US) Inc., Bliss, Idaho
Portland Cement Transfer Facility

Project No. T2-020406

Prepared By:

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State Office of Technical Services

FINAL PERMIT

TABLE OF CONTENTS

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EPA	U.S. Environmental Protection Agency
gr	grain (1 lb = 7,000 grains)
HAP	Hazardous air pollutant
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometer
lb/hr	pound per hour
MACT	Maximum Available Control Technology
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NSPS	New Source Performance Standards
O_3	ozone
O&M	operation and maintenance (manual)
Pb	lead
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to contruct
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SM	Synthetic Minor
SO_2	sulfur dioxide
SO_x	sulfur oxides
TAP	toxic air pollutant
T/yr	tons per year
$\mu g/m^3$	micrograms per cubic meter
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01 Sections 400 through 406, *Rules for the Control of Air Pollution in Idaho,* for Tier II Operating Permits and Sections 200 through 228 for Permits to Construct.

2. PROJECT DESCRIPTION

This project is for a new Tier II Operating Permit and Permit to Construct for Holcim (US) Inc.'s (Holcim's) Portland cement transfer facility located near Bliss, Idaho.

3. SUMMARY OF EVENTS

DEQ received an application for a Tier II operating permit from Holcim (US) Inc.

May 8, 2002: Application received

June 7, 2002: Determined complete

August 21, 2002: DEQ issued facility draft permit to Holcim (US) Inc.

September 3, 2002: DEQ received comments from Holcim (US) Inc. regarding facility draft permit.

October 4, 2002 through November 4, 2002: Public comment period held for proposed permit. No comments were received.

4. FACILITY DESCRIPTION

4.1 GENERAL FACILITY PROCESS DESCRIPTION

The Holcim Bliss facility is a Portland cement transfer terminal. The emissions sources at the facility are all related to material handling activities: driving vehicles on unpaved roads and moving Portland cement from rail cars to storage silos and from storage silos to trucks. Baghouse filters control emissions from rail car unloading and truck loading.

4.2 FACILITY CLASSIFICATION

The facility is not a designated facility as defined in IDAPA 58.01.01.006.27. The AIRS Facility Subsystem classification is SM (potential uncontrolled emissions are greater than 100 T/yr but permitted potential emissions are less than 100 T/yr). The facility is not subject to PSD permitting requirements for a major modification because the facility's PTE is less than 250 T/yr. This facility is a Portland cement transfer facility, SIC code 4214.

4.3 AREA CLASSIFICATION

Holcim is located in Gooding County, Idaho, within AQCR 63. The area is classified as attainment or unclassifiable for all federal and state criteria air pollutants (i.e., PM_{10}, SO_x, O_3, NO_2, CO, and Pb). There are no Class I areas within 10 km of the facility.

5. TECHNICAL ANALYSIS

5.1 EMISSIONS ESTIMATES

Facility operations produce emissions from material handling activities including rail car unloading, truck loading, and vehicle travel on unpaved roads. Emissions generated while unloading Portland cement from rail cars are collected and exhausted through baghouse filter EU-01. Emissions generated while loading Portland cement into trucks are collected and exhausted through baghouse filter EU-02. Baghouse stack parameters are listed below.

Stack EU-01		Stack EU-02	
Manufacturer:	DCL	Manufacturer:	Midwest
Maximum Air Flow:	600 acfm	Maximum Air Flow:	1,500 acfm
Stack Diameter:	5.75" x 5.75" (square)	Stack Diameter:	7.5"
Stack Height:	77.5'	Stack Height:	33.7'
Exhaust Temperature:	Ambient	Exhaust Temperature:	Ambient

The dust collection system used during rail car unloading includes a collapsible boot that covers the rail car and a covered screw auger that conveys the Portland cement directly to the storage silo bin. During truck loading, baghouse filter EU-02 is positioned directly above the spout that delivers the Portland cement to the trucks. A 1,500-acfm exhaust fan associated with EU-02 collects dust generated while loading trucks. The dust collection efficiencies of both rail car unloading and truck loading are assumed to be 100%.

Holcim obtained a manufacturer's guaranteed outlet loading of 0.05 gr/dscf for EU-01 from DCL. Holcim was unable to obtain similar information for EU-02; however, the outlet loading for EU-02 is assumed to be 0.05 gr/dscf. A reasonable emission factor for a well-designed and operated baghouse is 0.01 gr/dscf.[1] All PM emissions are assumed to be PM_{10}. This represents a worse case scenario. A summary of potential emissions is presented in Table 5.1.

Table 5.1. CONTROLLED MAXIMUM POTENTIAL CRITERIA POLLUTANT EMISSIONS

Potential Emissions - Hourly (lb/hr), and Annual[b] (T/yr)						
Source Description	PM		PM_{10}		Pb	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Rail Car Unloading (EU-01)	0.26	1.13	0.26	1.13	2.2E-06	3.8E-06
Truck Loading (EU-02)	0.64	2.82	0.64	2.82	5.4E-05	6.3E-05
Travel on Unpaved Roads	0.24	1.00	0.13	0.55	0	0
TOTAL	1.14	4.95	1.03	4.50	5.6E-05	6.7E-05

[a] As determined by a pollutant-specific U.S. EPA reference method, a DEQ-approved alternative, or as determined by the DEQ's emissions estimation methods used in this permit analysis.

[b] As determined by multiplying the actual or allowable (if actual is not available) pound-per-hour emissions rate by the allowable hours per year that the process(es) may operate(s), or by actual annual production rates.

The facility emits TAPs during material transfer operations. Calculations of hourly and annual TAP emissions are presented in Appendix A.

[1] Anthony J. Buonicore and Wayne T. Davis, *Air Pollution Engineering Manual*, (New York: Van Nostrand Reinhold, 1992), 115.

5.2 MODELING

For the purposes of ambient air quality modeling, emissions were recalculated using a cement handling emission factor for concrete batching from AP-42, Section 11.12 of 0.00034 pounds of PM_{10} per ton of cement handled. A conservative hourly maximum cement throughput of 300 tons per hour was used to generate a revised emission rate of 0.10 lb/hr. The results of modeling with the revised input emissions estimates are presented in Table 5.2.

Table 5.2. FULL IMPACT ANALYSIS FOR CRITERIA POLLUTANTS

Pollutant	Averaging Period	Ambient Concentration ($\mu g/m^3$)[a]	Background Concentration ($\mu g/m^3$)	Total Ambient Concentration ($\mu g/m^3$)	Regulatory Limit[b] ($\mu g/m^3$)	Compliant (Y or N)
Pb	Quarterly	0.00002[c]	Not Applicable	0.00002	1.5	Y
PM_{10}	24-hour	25[d]	86	111	150	Y
	Annual	7[c]	33	40	50	Y

[a] Micrograms per cubic meter
[b] IDAPA 58.01.01.577
[c] First highest modeled value
[d] Sixth highest modeled value

Complete details of the modeling review are presented in the modeling memorandum in Appendix B.

5.2.1 Toxics

An ambient air assessment of toxic substances was not performed by DEQ to demonstrate compliance with IDAPA 58.01.01.161. The magnitude and nature of toxic substance emissions, and the distance from the facility to the potential offsite public, adequately demonstrated compliance with IDAPA 58.01.01.161.

5.3 REGULATORY REVIEW

5.3.1 Scope

The purpose of this Tier II Operating Permit and Permit to Construct is to limit emissions of criteria pollutants to below major facility thresholds.

Construction on the facility began in September 1987, and operations began in January 1988. Holcim acquired the facility in April 1998. Neither Holcim nor the previous owner has obtained a PTC for this facility. This Tier II/PTC resolves the outstanding issue of not obtaining a PTC prior to construction.

5.3.2 Facility-wide Conditions

The permittee is required to conduct a monthly facility-wide inspection of potential fugitive emissions sources. Potential fugitive emissions sources include unloading rail cars, loading trucks, and vehicle travel on unpaved roads. In accordance with Permit Condition 2.1, the permittee is required to take all reasonable precautions to prevent fugitive emissions. The monthly inspections will aid the facility in determining whether the precautions taken at the facility, including PM collection systems, are functioning properly.

The permittee is required to conduct a monthly facility-wide inspection of visible emissions/opacity sources. Potential visible emissions sources include the two baghouse filter stacks. In accordance with Permit Condition 2.7, the permittee shall not discharge any air pollutant to the atmosphere from any point of emission for a period or periods aggregating more than three minutes in any 60-minute period that is greater than 20% opacity. The monthly inspections will aid the facility in determining whether PM collection and filter systems are functioning properly.

5.3.3 Storage Silo Bin Vent

5.3.3.1 Operational Limit - (Permit Condition 3.3)

The maximum annual amount of Portland cement transferred from rail cars to the storage silos shall not exceed 700,000 tons per any consecutive 12-month period. The annual throughput limit is required to ensure annual ambient impacts from emissions of PM_{10} comply with the NAAQS.

Hourly emissions estimates were based on cement throughputs of 300 tons per hour. The facility cannot achieve this production rate with its current configuration and equipment. Modeling indicated ambient impacts at this throughput were less than the 24-hour NAAQS for PM_{10}. Therefore, an hourly or daily cement throughput limit was not required for the facility.

Compliance Demonstration

The permittee is required to monitor and record the transfer of Portland cement from rail cars to the storage silos each month and for the previous consecutive 12-month period.

5.3.3.2 Operational Limits - (Permit Condition 3.4)

The permittee is required to operate and maintain a baghouse filter (EU-01) when material is transferred to or from the storage silos and when material is stored in the silos. The permittee calculated PM and PM_{10} emissions rates based on a conservative outlet loading from the baghouse stack of 0.05 gr/dscf. At this emission rate, PM and PM_{10} emissions are each less than 100 tons per year. Uncontrolled operations would result in PM and PM_{10} greater than 100 tons per year. Baghouse operation is required to ensure ambient impacts from PM_{10} emissions do not exceed NAAQs and to limit PM and PM_{10} emissions to below major facility threshold emissions.

The permittee is required to monitor the pressure drop across the baghouse to ensure the pressure drop is maintained within manufacturer and O&M manual specifications. Pressure drop is an indicator of baghouse efficiency and is monitored to ensure proper baghouse operation.

Compliance Demonstration

The facility is required to develop an O&M manual for baghouse operation within 90 days of permit issuance (Permit Condition 3.5).

On a monthly basis, the permittee is required to monitor and record the pressure drop across the baghouse while material is transferred from rail cars to storage silos (Permit Condition 3.7).

5.3.4. Truck Loading

5.3.3.1 Operational Limit - (Permit Condition 4.3)

The maximum annual transfer of Portland cement from the storage silos to trucks shall not exceed 700,000 tons per any consecutive 12-month period. The annual throughput limit is required to ensure annual ambient impacts from emissions of PM_{10} comply with the NAAQS.

Hourly emissions estimates were based on cement throughputs of 300 tons per hour. The facility cannot achieve this production rate with its current configuration and equipment. Modeling indicated ambient impacts at this throughput were less than the 24-hour NAAQS for PM_{10}. Therefore, an hourly or daily cement throughput limit was not required for the facility.

Compliance Demonstration

The permittee is required to monitor and record the amount of Portland cement transferred from the storage silos to trucks each month and for the previous consecutive 12-month period.

5.3.3.2 Operational Limit - (Permit Condition 4.4)

The permittee is required to operate and maintain a baghouse filter (EU-02) when material is transferred from the storage silos to trucks. The permittee calculated PM and PM_{10} emissions rates based on a conservative outlet loading estimate from the baghouse stack of 0.05 gr/dscf. At this emission rate, PM and PM_{10} emissions are each less than 100 tons per year. Uncontrolled operations would result in PM and PM_{10} greater than 100 tons per year. Baghouse operation is required to ensure ambient impacts from PM_{10} emissions do not exceed NAAQs and to limit PM and PM_{10} emissions to below major facility threshold emissions.

The permittee is required to monitor the pressure drop across the baghouse to ensure the pressure drop is maintained within manufacturer and O&M manual specifications. Pressure drop is an indicator of baghouse efficiency and is monitored to ensure proper baghouse operation.

Compliance Demonstration

The facility is required to develop an O&M manual for baghouse operation within 90 days of permit issuance (Permit Condition 4.5).

On a monthly basis, the permittee is required to monitor and record the pressure drop across the baghouse while material is transferred from storage silos to trucks (Permit Condition 4.7).

5.4 NSPS APPLICABILITY

Subpart F (Standards of Performance for Portland Cement Plants) and Subpart OOO (Standards of Performance for Nonmetallic Mineral Processing Plants) are the only NSPS standards that could apply to the Bliss terminal.

Subpart F is applicable to Portland cement plants. Section 60.61 of 40 CFR Part 60 defines a Portland cement plant as any facility manufacturing Portland cement by either the wet or dry process. The Holcim Bliss terminal does not manufacture Portland cement; therefore, Subpart F does not apply to the facility.

Subpart OOO is applicable to nonmetallic mineral processing plants. Section 60.671 of 40 CFR Part 60 defines a nonmetallic mineral processing plant as any combination of equipment that is used to crush or grind any nonmetallic mineral. The Holcim Bliss terminal does not crush or grind any nonmetallic mineral; therefore, Subpart OOO does not apply to the facility.

6. AIRS

AIRS/AFS FACILITY-WIDE CLASSIFICATION DATA ENTRY FORM

AIR PROGRAM / POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	TITLE V	AREA CLASSIFICATION (A – Attainment, U – Unclassifiable, N – Nonattainment)
SO_2	B						U
NO_x	B						U
CO	B						U
PM_{10}	SM	SM				SM	U
PT (Particulate)	SM	SM				SM	
VOC	B						U
THAP (Total HAPs)	B						
			APPLICABLE SUBPART				

AIRS/AFS Classification Codes:
A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For NESHAP only, class "A" is applied to each pollutant which is below the 10 T/yr threshold, but which contributes to a plant total in excess of 25 T/yr of all NESHAP pollutants.
SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.
B = Actual and potential emissions below all applicable major source thresholds.
C = Class is unknown.
ND = Major source thresholds are not defined (e.g., radionuclides).

6. TIER II FEES

Fees apply to this facility in accordance with IDAPA 58.01.01.407. The facility is a synthetic minor source; therefore, a fee of $10,000 will be assessed to the facility upon issuance of the Tier II/PTC.

7. RECOMMENDATIONS

Based on the review of the application materials, and all applicable state and federal regulations, staff recommends that DEQ issue a Tier II Operating Permit and Permit to Construct to Holcim (US) Inc. An opportunity for public comment on the air quality aspects of the proposed operating permit shall be provided in accordance with IDAPA 58.01.01.404.01.c. The permit will be issued upon receipt of the fee.

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CC: Stephen VanZandt, Twin Falls Regional Office

APPENDIX A

TAP Emissions Estimates

APPENDIX A
TAP ANALYSIS - SILO FILLING

Table 1. Non-carcinogenic Toxic Air Pollutants

Toxic Air Pollutant	Controlled Emissions Factors - Silo Filling (lb/ton material)	Emissions - Silo Filling (lb/hour)	Annual Emissions - Silo Filling (ton/yr)	Facility-Wide Total Hourly Emissions
Chromium Metal (total)	2.90E-08	5.80E-06	1.02E-05	1.8E-04
Manganese	1.17E-07	2.34E-05	4.10E-05	9.41E-04
Phosphorous	2.78E-12	5.56E-10	9.73E-10	6.E-04
Portland Cement	Not Applicable	2.57E-01	1.12566	9.00E-01
Selenium	Not Detected	Not Detected	Not Applicble	3.9E-05

Table 2. Carcinogenic Toxic Air Pollutants

Toxic Air Pollutant	Controlled Emissions Factors - Silo Filling (lb/ton material)	Emissions - Silo Filling (lb/hour)	Annual Emissions - Silo Filling (ton/yr)	Facility-Wide Total Hourly Emissions
Arsenic	4.24E-09	8.48E-07	1.48E-06	4.6E-05
Beryllium	4.86E-10	9.72E-08	1.70E-07	3.8E-06
Cadmium	4.86E-10	9.72E-08	1.70E-07	6.1E-07
Nickel	4.18E-08	8.36E-06	1.46E-05	1.8E-03

Notes: Hourly emissions based on 200 tons per hour throughput.
Annual emissions based on 700,000 tons per cosecutive 12-month period throughput.

APPENDIX A
TAP ANALYSIS - TRUCK LOADING

Table 1. Non-carcinogenic Toxic Air Pollutants

Toxic Air Pollutant	Controlled Emissions Factors - Truck Loading (lb/ton material)	Emissions - Truck Loading (lb/hour)	Annual Emissions - Truck Unloading (ton/yr)	Facility-Wide Total Hourly Emissions
Chromium Metal (total)	5.70E-07	1.71E-04	2.00E-04	1.8E-04
Manganese	3.06E-06	9.18E-04	1.07E-03	9.41E-04
Phosphorous	1.92E-06	5.76E-04	6.72E-04	6.E-04
Portland Cement	Not Applicable	6.43E-01	2.81634	9.00E-01
Selenium	1.31E-07	3.93E-05	4.59E-05	3.9E-05

Table 2. Carcinogenic Toxic Air Pollutants

Toxic Air Pollutant	Controlled Emissions Factors - Truck Loading (lb/ton material)	Emissions - Truck Loading (lb/hour)	Annual Emissions - Truck Unloading (ton/yr)	Facility-Wide Total Hourly Emissions
Arsenic	1.52E-07	4.56E-05	5.32E-05	4.6E-05
Beryllium	1.22E-08	3.66E-06	4.27E-06	3.8E-06
Cadmium	1.71E-09	5.13E-07	5.99E-07	6.1E-07
Nickel	5.95E-06	1.79E-03	2.08E-03	1.8E-03

Notes: Hourly emissions based on 300 tons per hour throughput.
Annual emissions based on 700,000 tons per cosecutive 12-month period throughput.

APPENDIX B

Modeling Memorandum

MEMORANDUM

TO: Michael Stambulis, Associate Air Quality Engineer, Division of Technical Services

FROM: Kevin Schilling, Air Quality Scientist, Division of Technical Services

SUBJECT: Modeling Review for the Holcim (US) Inc. Portland Cement Transfer Facility Tier II Operating Permit Application; Holcim Inc., Bliss, Idaho

DATE: July 12, 2002

1. SUMMARY:

Holcim (US) Inc. (Holcim) submitted an application for a Tier II operating permit (permit No. 047-00013) for their Bliss, Idaho Portland Cement Transfer facility. The application was received by the Idaho Department of Environmental Quality (DEQ) on May 8, 2002, and was declared complete on June 6, 2002. Facility-wide modeling was submitted with the Tier II operating permit application to demonstrate that emissions from the facility would not cause or significantly contribute to a violation of an ambient air quality standard, as required by IDAPA 58.01.01.403.02.

DEQ has reviewed the analyses and supporting materials submitted, and has verified that operation of the Holcim facility as specified in the Tier II operating permit application and the Tier II operating permit will satisfy the requirements of IDAPA 58.01.01.403.02.

2. DISCUSSION:

2.1 Introduction and Regulatory Requirements for Modeling

On May 8, 2002, DEQ received a Tier II operating permit application from Holcim for their Bliss, Idaho Portland Cement Transfer facility. The primary emissions generating activities at the facility are cement transfer operations from railcar to storage silo and from storage silo to truck transport containers.

Per IDAPA 58.01.01.403, no Tier II operating permit can be granted unless the applicant demonstrates to the satisfaction of DEQ that emissions from the facility "would not cause or significantly contribute to a violation of any ambient air quality standard." Atmospheric dispersion modeling was performed by the applicant's consultant, Trinity Consultants (Trinity), to fulfill these requirements.

2.2 Applicable Air Quality Impact Limits and Required Analyses

The Holcim facility is located in Gooding County, designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), and particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}).

If estimated maximum ambient air impacts from the emissions sources at the facility exceed the "significant contribution" levels of IDAPA 58.01.01.006.93, then DEQ modeling guidance requires a full impact analysis. A full impact analysis for attainment area pollutants requires adding ambient impacts from facility-wide emissions to a DEQ-approved background concentration value that is appropriate for each criteria pollutant at the facility location. The resulting maximum ambient air concentration is then compared to the National Ambient Air Quality Standards (NAAQS) listed in Table 1. Table 1 also specifies the modeled value that must be used for comparison to the NAAQS.

Table 1. Applicable Regulatory Limits

Pollutant	Averaging Period	Regulatory Limit[a] ($\mu g/m^3$)[b]	Modeled Value Used[c]
Nitrogen Dioxide (NO_2)	Annual	100[d]	Maximum 1st highest[e]
Sulfur Dioxide (SO_2)	3-hour	1,300[f]	Maximum 2nd highest[e]
	24-hour	365[f]	Maximum 2nd highest[e]
	Annual	80[d]	Maximum 1st highest[e]
Carbon Monoxide (CO)	1-hour	40,000[f]	Maximum 2nd highest[e]
	8-hour	10,000[f]	Maximum 2nd highest[e]
PM_{10}	24-hour	150[f]	Maximum 6th highest[e]
	Annual	50[d]	Maximum 1st highest[e]
Lead (Pb)	Quarterly	1.5[d]	1 Maximum st highest[e]

a. IDAPA 58.01.01.577
b. Micrograms per cubic meter
c. When using five years of meteorological data
d. Not to be exceeded
e. At any modeled receptor
f. Not to be exceeded more than once per year
g. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

An ambient air assessment of TAP impacts was not performed for the facility to demonstrate compliance with IDAPA 58.01.01.161. DEQ determined that the magnitude and nature of TAP emissions and the distance of the facility from the potential offsite public adequately demonstrated compliance with IDAPA 58.01.01.161.

2.3 Background Concentrations

Applicable background concentrations are shown in Table 2. Statewide background concentrations used for the Holcim Tier II operating permit application were provided by DEQ to Trinity.

Table 2. Background Concentrations

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)[a]
PM_{10}	24-hour	86
	Annual	33
Pb	Quarterly	not available

a. Micrograms per cubic meter

2.4 Modeling Impact Assessment

The ambient air impact analysis was performed by Trinity using the model ISC-PRIME - Version 99020. A modeling protocol was submitted to and approved by DEQ prior to Holcim's submission of the Tier II operating permit application. DEQ conducted verification modeling using ISC-PRIME - Version 99020; Table 3 provides a summary of the modeling parameters used for the DEQ analysis. Trinity originally used a receptor grid of 50-meter spacing out to 1,500 meters from the emission source, and a coarse grid of 500-meter spacing out to 5,000 meters from the source. DEQ refined this grid during model verification to the values specified in Table 3. This adjustment was made to provide greater assurance that areas of maximum concentration were identified. Typically, a minimum grid spacing of 25 meters is used for dispersion modeling. The 5-meter spacing along the facility boundary was used for Holcim because the close proximity of the emissions source to ambient air and the plume downwash caused by the presence of the silos resulted in a strong concentration gradient. The maximum modeled concentration could have been missed by a more coarse receptor grid. Figure 1 shows the revised receptor grid used for the modeling analysis.

Emissions from the facility occur from two sources: 1) cement unloading from railcar into storage silos; 2) cement loading from storage silos to ground transport trucks. Both of these emission-generating activities are controlled by fabric filters. The applicant originally estimated PM_{10} emissions for both sources using the manufacturer's specifications for the Silo Bin Vent Collector of 0.05 grains/cubic foot per minute (gr/cfm). This resulted in a maximum PM_{10} emission rate of 0.26 lb/hr for the Silo Bin Vent Collector (EU-01) and 0.64 lb/hr for Truck Loading (EU-02).

Table 3. Modeling Parameters

Parameter	Description/Values	Documentation/Additional Description
Model	ISCST3	Version 99020
Meteorological Data	Pocatello, Idaho (surface); Boise, Idaho (upper air)	1987-1991 Files: Pihboi87.asc; Pihboi88.asc; Pihboi89.asc; Pihboi90.asc; Pihboi91.asc
Model Options	Regulatory Default	
Land Use	Rural	Based on population density and actual land use.
Terrain	Simple and Complex	Elevation data from digital elevation model (DEM) files File: ce24316.XYZ
Building Downwash	Used building profile input program (BPIP)	Building dimensions obtained from modeling files submitted.
Receptor Grids (See Figure 1)	Grid 1	5 meter spacing along site boundary out to 10 meters on the north and west, 20 meters to south and east.
	Grid 2	25 meter spacing out to about 75 meters.
	Grid 3	50 meter spacing out to about 400 meters.
Facility Location (UTM)	E	667.7 kilometers
	N	4,754.8 kilometers

Modeled concentrations exceeding the 24-hour PM_{10} NAAQS, when combined with background concentrations, were derived when the originally estimated emissions rates were modeled by DEQ with the revised receptor grid. DEQ reassessed the emissions estimates to determine if those used in the modeling were representative of actual emissions from the facility. DEQ concluded that emissions were significantly overestimated because cement is only intermittently handled and the emissions estimate submitted by the applicant assumes cement is continuously handled. Emissions were then recalculated using cement handling factors for concrete batching from AP-42, Section 11.12. An emission factor of 0.00034 lb/ton of cement handled was used, in combination with the maximum hourly throughput of 300 ton/hr, to generate a revised emissions rate of 0.10 lb/hr.

Fugitive dust emissions from vehicle traffic on facility roadways was originally included in the applicant's dispersion modeling. DEQ modeling policy does not require the inclusion of these sources in the NAAQS compliance demonstration. Therefore, DEQ verification modeling was conducted without inclusion of this source.

The applicant estimated lead emissions using factors from AP-12, Section 11.12. DEQ verification modeling was conducted using these rates.

Tables 4 and 5 provide emissions quantities and other emissions parameters. Stack location, stack height, stack diameter, stack gas temperature, and stack gas flow rate were provided by Trinity.

Table 4. Emission Quantities

Source	Maximum Hourly Emissions Rate[a] pounds per hour (lb/hr)		Annual Emissions Rate[b] tons per year (t/yr)	
Pollutant	**PM_{10}**	**Pb[c]**	**PM_{10}**	**Pb**
Silo Bin Vent Collector (EU-01)	0.10	8.7E-7	0.12	3.8 E-6
Truck Loading (EU-02)	0.10	1.45E-5	0.12	6.3 E-5

a. Emission rate used for 24-hour averaging periods
b. Emission rate used for annual averaging period
c. Average hourly emission rate

Table 5. Emissions and Stack Parameters

Source / Location	Source Type	Stack Height (m)[a]	Stack Diameter (m)	Stack Gas Temp. (K)[b]	Stack Gas Flow Velocity (m/sec)
Silo Bin Vent Collector (EU-01)	Point	23.6	0.29	297	0.001[c]
Truck Loading (EU-02)	Point	10.3	0.19	297	0.001[c]

a. Meters
b. Kelvin
c. 0.001 m/sec used because of the presence of a rain cap over the stack

Building and tank dimensions provided in the building profile input program (BPIP) file were compared against the scaled plot plan and the effect of buildings and tanks on plume downwash was included in the analysis.

A significant impact analysis was initially performed to determine if emissions from the facility would "significantly contribute" to pollutant concentrations in ambient air, as per IDAPA 58.01.01.006.93. A full impact analysis was then performed for those pollutants emitted from the facility that were estimated to have an ambient impact exceeding "significant contribution" levels. The full impact analysis involved modeling impacts from the facility's emissions and adding those impacts to background concentrations. There is no significant impact level for lead and background ambient lead concentrations are not available. As a screening level, a significant contribution level equal to the 1.5 $\mu g/m^3$ standard, identified in Table 1, divided by 100 (0.015 $\mu g/m^3$) was used.

3. MODELING RESULTS:

Modeled ambient air impact results from the significant impact analysis are provided in Table 6 for facility-wide emissions. A monthly averaging time period was conservatively used for lead. The values reported in this memorandum were obtained from DEQ verification modeling. Because the potential ambient impact of the facility-wide emissions exceeds "significant contribution" levels for annual PM_{10} and 24-hour PM_{10}, a full impact analysis was performed for those pollutants and averaging times.

Table 6. Significant Impact Analysis for Criteria Pollutants (Facility-wide Emissions)

Pollutant	Averaging Period	Ambient concentration ($\mu g/m^3$)	Significant Contribution[a] ($\mu g/m^3$)	Full Impact Analysis Required (Y or N)
PM_{10}	24-hour	28[b]	5.0	Y
	Annual	7.0[b]	1.0	Y
Pb	Monthly	0.0014[b]	NA	N

a. Significant contribution level as per IDAPA 58.01.01.006.93
b. 1st highest modeled value

Results of the full impact analysis are presented in Table 7 and indicate that operation of the facility as described in the Tier II operating permit application will not cause or significantly contribute to a violation of an applicable NAAQS. Figures 2 and 3 show the maximum-modeled PM_{10} 24-hour averaged concentration impacts and annual averaged concentrations, respectively.

Electronic copies of the modeling analysis are saved on disk. Table 8 provides a summary of the files used in the modeling analysis. The permitting engineer has reviewed this modeling memo to ensure consistency with the Tier II operating permit and technical memorandum.

Table 7. Full Impact Analysis for Criteria Pollutants (Facility-wide Emissions)

Pollutant	Averaging Period	Ambient Conc. ($\mu g/m^3$)[a]	Background Conc. ($\mu g/m^3$)	Total Ambient Conc. ($\mu g/m^3$)	Regulatory Limit[b] ($\mu g/m^3$)	Compliant (Y or N)
PM_{10}	24-hour	25[c]	86	111	150	Y
	Annual	7.0[d]	33	40	50	Y

a. Concentration in micrograms per cubic meter
b. IDAPA 58.01.01.577
c. Maximum 6th highest modeled value at any receptor
d. Maximum 1st highest modeled value at any receptor

Table 8. Dispersion Modeling Files

Type of File	Description	File Name
Met Data	1987-1991 consistent with DEQ data	Pihboi87.asc; Pihboi88.asc; Pihboi89.asc; Pihboi90.asc; Pihboi91.asc;
BEEST Input Files	PM_{10}, Facility 24-hour and less	HolcimEmissionMod.BST
	PM_{10}, Facility for each of five years	HolcimEmissionModAnnYY.BST (YY = year 87 – 91)
	Pb, Facility monthly average	HolcimEmissionModPb.BST
Each BST file has the following type of files associated with it:		
Input file for BPIP program		.PIP
BPIP output file		.TAB
Concise BPIP output file		.SUM
BEE-Line file containing direction-specific building dimensions		.SO
ISCST3 input file for each pollutant		.DTA
ISCST3 output list file for each pollutant		.LST
User summary output file for each pollutant		.USF
Master graphics output file for each pollutant		.GRF
Some modeling files have the following type of graphics files associated with them:		
Surfer data file		.DAT
Surfer boundary file		.BLN
Surfer post file containing source locations		.TXT
Surfer plot file		.SRF

KS: G:\Technical Services\Modeling\Schilling\Holcim\Holcim modeling Tech memo.doc

Figure 1 - Holcim Tier II Operating Permit Ambient Air Impacts

Ambient Air Receptor Grid

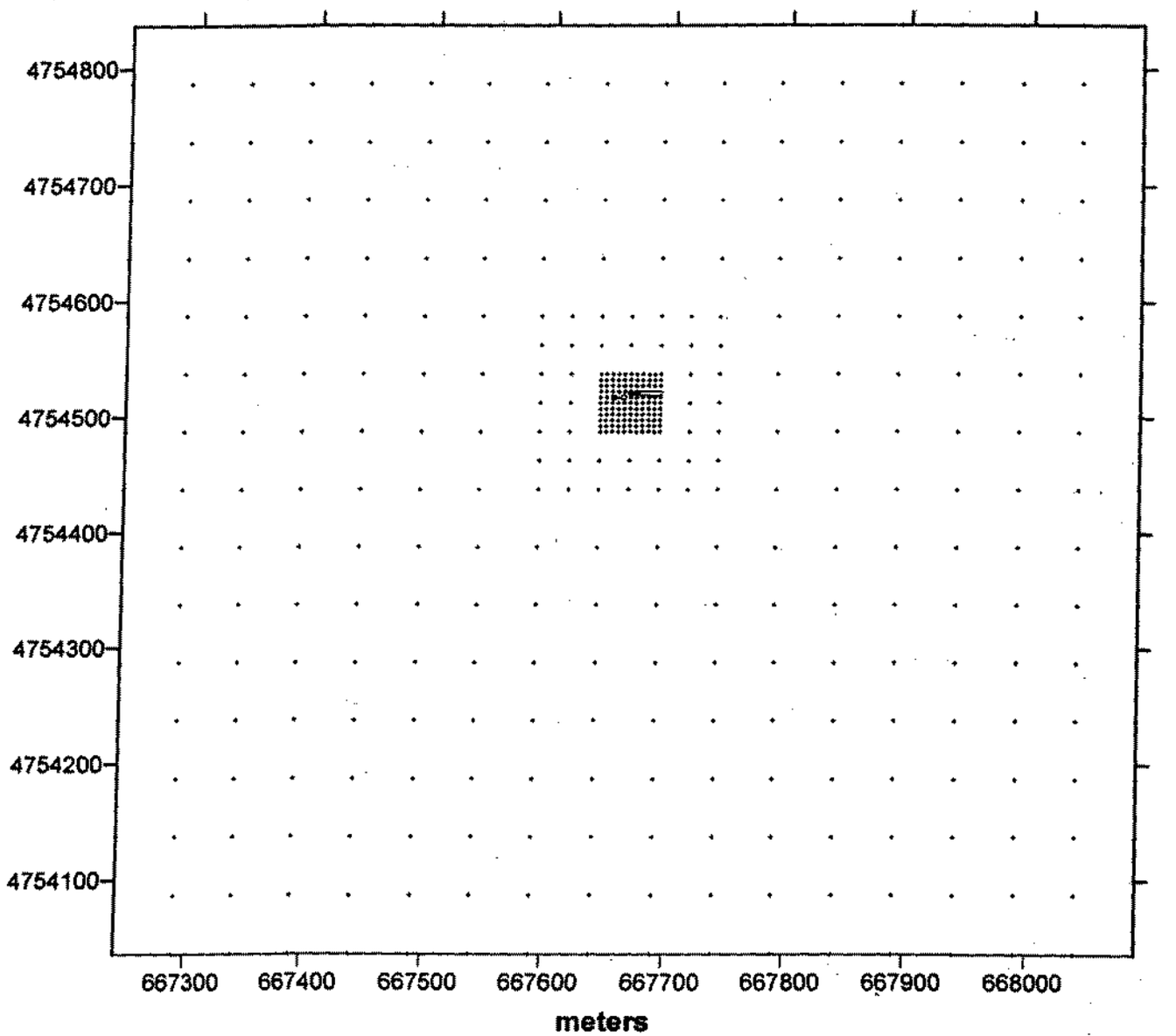

Figure 2 - Holcim Tier II Operating Permit Ambient Air Impacts

6th Highest 24-Hr PM-10 Impact (Including Background of 86 ug/m3)

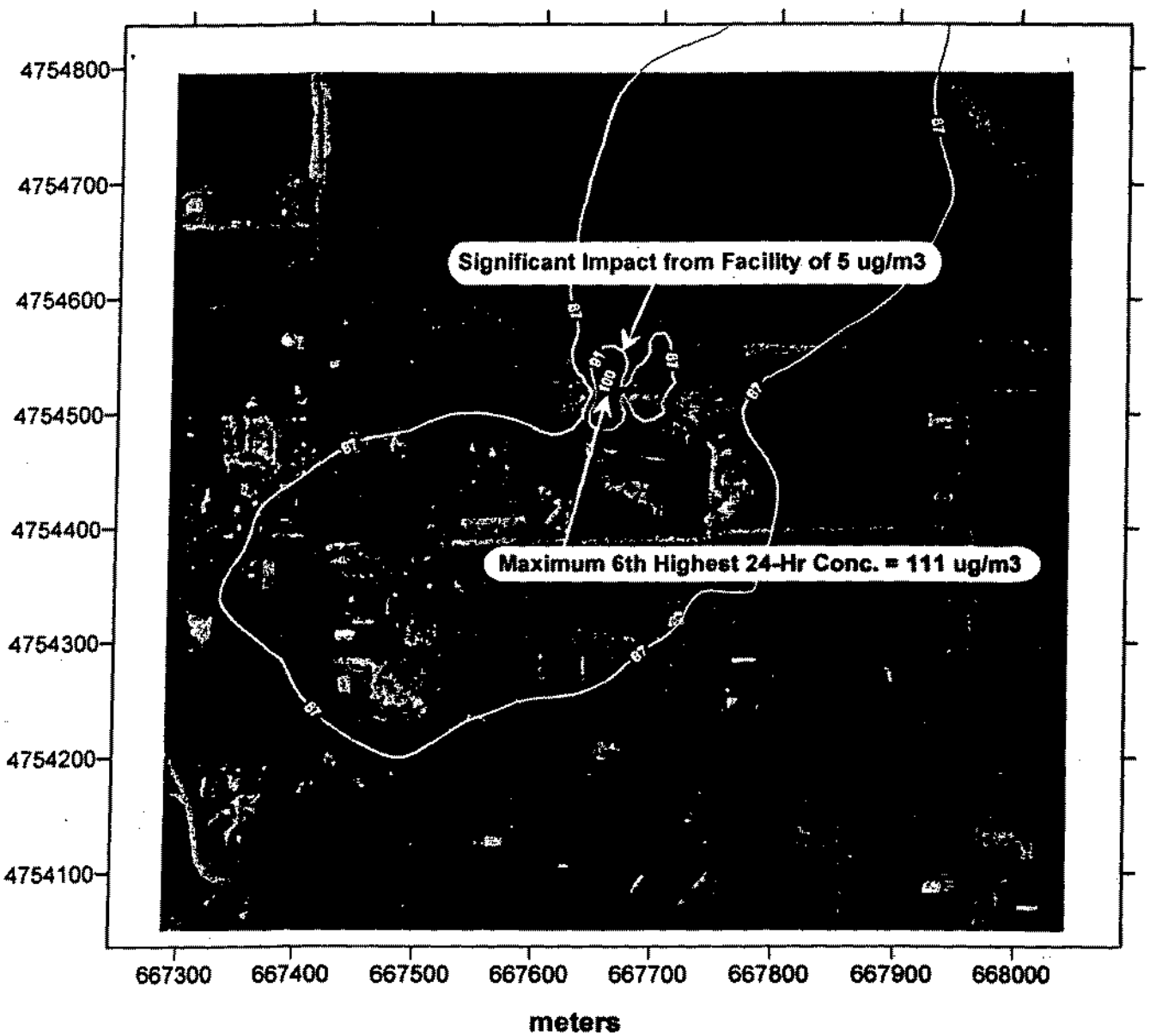

Figure 3 - Holcim Tier II Operating Permit Ambient Air Impacts

Highest Annual PM-10 Impact (Including Background of 33 ug/m3)